



PROFACTOR®
DER DEUTSCHE QUALITÄTSSTANDARD

EN

TECHNICAL DATA SHEET AND USER MANUAL



PRODUCT CODE

PF PRV 253
PF PRV 253G
PF PRV 254
PF PRV 254G

**DIAPHRAGM-TYPE
PRESSURE REDUCING VALVE**

1. PURPOSE AND SCOPE

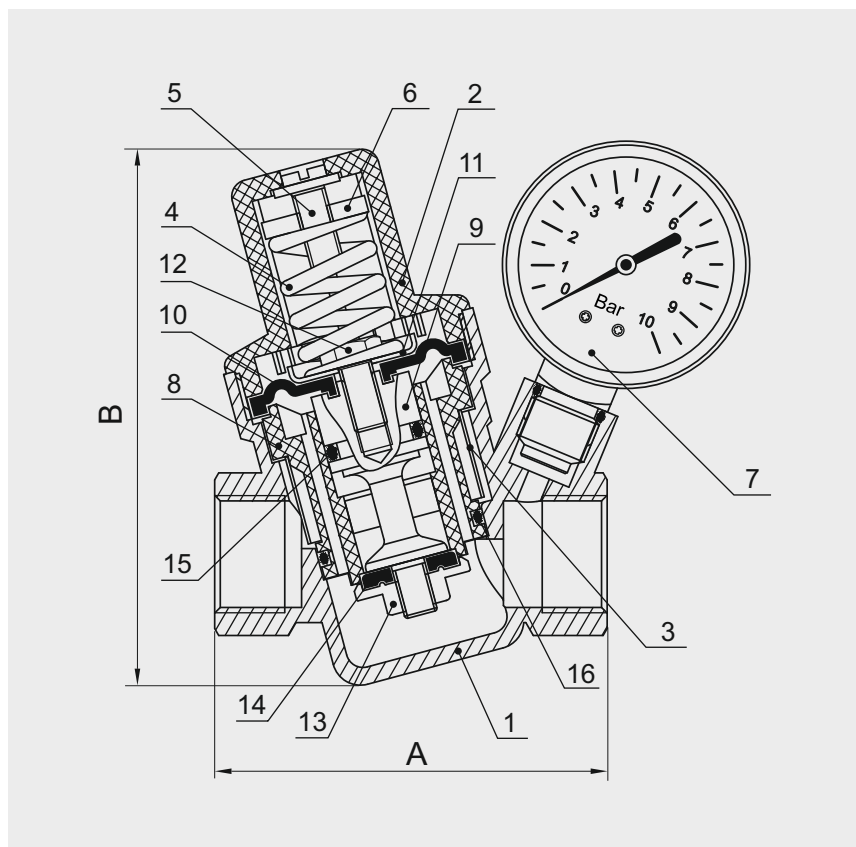
The PROFACTOR® diaphragm-type pressure reducing valves are designed to reduce pressure in domestic and industrial water supply systems. The valve maintains a constant preset outlet pressure (adjustable) under both dynamic and static operating conditions, regardless of fluctuations in inlet pressure.

These valves are used in small individual systems and boilers, where compact dimensions and low noise levels are important.

2. TECHNICAL SPECIFICATIONS

Product Code	PF PRV	253	253G	254	254G
Nominal size	DN	15		20	
	G	1/2"		3/4"	
Pressure gauge connection thread	G	1/4"			
Maximum inlet working pressure, PN	bar	16			
Maximum operating temperature	°C	80			
Outlet pressure adjustment range	bar	1 – 6			
Factory-set outlet pressure	bar	3			
Recommended water flow rate at an average velocity of 1.5 m/s	m³/h	1,2		2,1	
	L/min	20		35	
Installation length (A)	mm	70		72	
Height (B)	mm	95	120	95	120
Weight	g	410	470	395	455
Average service life	years	15			

3. DESIGN



- 1 – Body
- 2 – Cover
- 3 – Filter screen
- 4 – Spring
- 5 – Adjusting screw
- 6 – Lock nut
- 7 – Pressure gauge
- 8 – Central support

- 9 – Piston
- 10 – Diaphragm
- 11 – Piston plate
- 12 – Retaining screw
- 13 – Valve
- 14 – Valve gasket
- 15 – Small O-ring
- 16 – Large O-ring

The pressure gauge is included with the following models: PF PRV 253G and PF PRV 254G.

Models PF PRV 253 and PF PRV 254 are supplied without a pressure gauge and are equipped with a plug instead.

The spacious outlet chamber of the pressure reducing valve significantly lowers the fluid velocity, which effectively reduces noise generated by the narrowing of the passage through which water flows when the valve reduces pressure. The central support (8) is made of a low-adhesion plastic — polyoxymethylene (POM) — which reduces the likelihood of internal deposits.

The special diaphragm design ensures precise pressure regulation depending on changes in outlet water pressure and also increases the service life of the valve, as the diaphragm is more resistant to sudden pressure fluctuations and wear.

All pipe cylindrical threads are in accordance with ISO 228–1:2000, DIN 259.

4. MATERIALS

Valve body (1) — Brass CW617N (DIN EN 12165), Nickel-plated
 Piston (9), Valve (13) — Brass CW617N (DIN EN 12165)
 Cover (2) — PA66GF30: Polyamide (Nylon 6.6) reinforced with 30% glass fiber
 Filter mesh (3), Plate (11), and Retaining screw (12) — Stainless steel AISI 304 (DIN EN 10088)
 Adjusting screw (5) and Nut (6) — Brass CW614N (DIN EN 12165)
 Central support (8) — Polyoxymethylene (POM)
 Diaphragm (10) and Sealing elements (14, 15, 16) — NBR (nitrile rubber)
 Spring (4) — Nickel-plated carbon steel Mn65

5. OPERATING PRINCIPLE

The operation of the pressure reducing valve is based on the balance of two opposing forces: the spring force, acting on the piston plate and tending to open the valve, and the water pressure in the outlet chamber, acting on the diaphragm and tending to close the valve.

When a water tap is opened, the spring force exceeds the water pressure acting on the diaphragm. The piston moves downward, opening the valve and allowing water to flow. The higher the water consumption, the lower the pressure under the diaphragm — resulting in a greater flow of water through the valve.

When the water tap is closed, the water pressure in the outlet chamber increases, pushing the diaphragm upward. Consequently, the piston moves upward, closing the valve and maintaining a constant preset pressure.

6. PRESSURE REDUCING VALVE ADJUSTMENT

The valve can be adjusted without being removed from the system. Before adjusting a valve installed in the system, it is recommended to open as many water outlets as possible to remove air from the valve. During adjustment, all water taps must be closed.

The pressure gauge shows the outlet pressure. All valves are factory-set to an outlet pressure of 3 bar. To change the outlet pressure, turn the adjustment screw located on the top surface of the cover. Turning the adjustment screw clockwise increases the outlet pressure, while turning it counterclockwise decreases it.

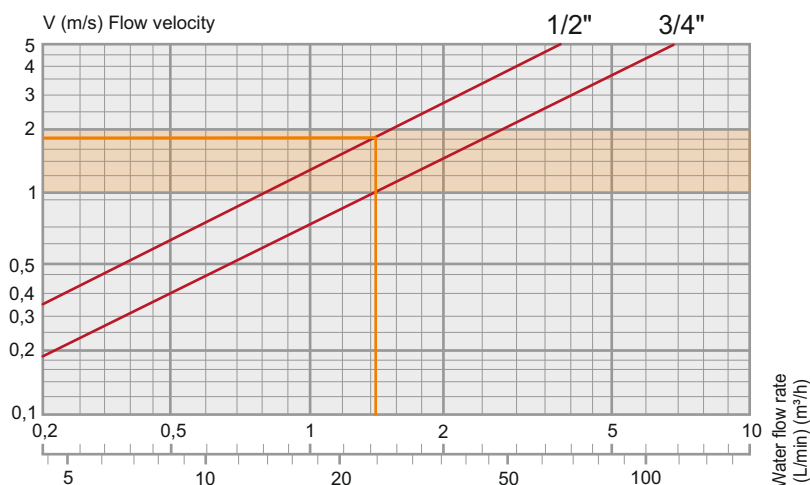
7. SELECTING THE NOMINAL VALVE SIZE

To avoid noise in the pipes and premature wear of the pressure reducing valve, it is advisable to maintain the water velocity in the system within the range of 1 to 2 m/s. This is especially relevant for water supply systems in residential buildings.

By determining the average water flow rate and taking into account the possibility of simultaneous use of several water outlets, the most suitable nominal valve size — 1/2" or 3/4" — can be selected.

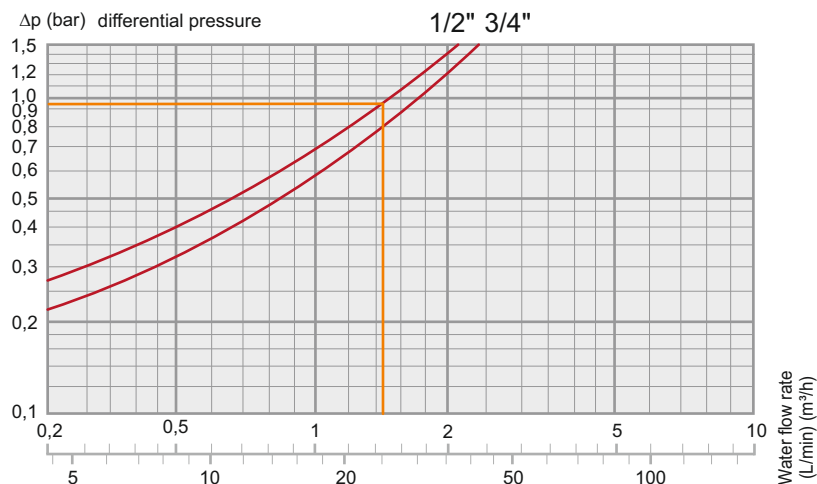
Example: Average water flow rate — 20 L/min. According to Diagram 1, for this system, pressure reducing valves with a nominal size of 1/2" (models PF PRV 253 and PF PRV 253G) are suitable.

Diagram 1



Knowing the average water flow rate and selecting the nominal size of the pressure reducing valve, the pressure drop can be determined from Diagram 2. The pressure in the outlet chamber decreases by an amount equal to the reduction in pressure relative to the set value under no-flow conditions.

Diagram 2



8. INSTALLATION INSTRUCTIONS

The pressure reducing valve may be installed in any position; however, the arrow on the valve body must correspond to the direction of the water flow.

The valve must not be subjected to loads from the pipeline (bending, compression, tension, torsion, misalignment, vibration, or uneven tightening of fasteners). If necessary, supports or compensators should be provided to reduce the load on the valve from the pipeline.

The misalignment of connected pipelines must not exceed 3 mm for a length up to 1 meter, plus 1 mm for each additional meter.

It is recommended to install manual shut-off valves to allow for maintenance of the pipeline section where the pressure reducing valve is installed. A coarse water filter should be installed upstream of the valve.

Threaded connections must be made using PTFE-tape (fluoroplastic sealing material), polyamide thread, or flax fiber as the sealing material. Care must be taken to ensure that excess sealing material does not enter the inlet chamber of the valve, as this may cause debris to reach the valve seat and impair the valve's performance.

The maximum tightening torque during installation of pressure reducing valves must not exceed: PF PRV 253 and PF PRV 253G — 25 Nm; PF PRV 254 and PF PRV 254G — 35 Nm.

Check the correctness of installation. After installation, it is recommended to open all water draw-off taps to remove air from the valve and to flush it. Check the system for tightness.

9. OPERATING AND MAINTENANCE

The pressure reducing valve must be operated without exceeding the pressure and temperature limits specified in the technical data table.

It is recommended to periodically clean the removable cartridge and filter mesh in cases where the valve is unable to maintain the set calibration pressure. Before removing the filter or cartridge from the valve body, the inlet valve must be closed, and water drained from the system or the section where the device is installed. Then, turn the adjustment screw counterclockwise until the internal spring is completely unloaded. After that, the cover can be unscrewed, and the cartridge and filter removed.

If contaminated, they must be washed or cleaned, then reinstalled in their original position. After this procedure, the valve should be readjusted to the required pressure. If the cartridge is worn, it must be replaced with a new one.

10. WARRANTY OBLIGATIONS

The warranty period is 12 months from the date of sale to the end consumer. Throughout the entire warranty period, the manufacturer guarantees the proper functioning of the product and its compliance with safety requirements, provided that the consumer follows the rules for storage, transportation, installation, operation, and maintenance of the product. The warranty covers all defects arising through the manufacturer's fault.

The warranty does not cover defects resulting from:

- Violation of storage, transportation, installation, operation, or maintenance conditions;
- Exposure to substances aggressive to the materials of the product;
- Signs of mechanical damage;
- Damage caused by fire, natural disasters, or other force majeure circumstances;
- Damage caused by improper actions of the user;
- Evidence of unauthorized interference with the product design.

The product described in this technical manual is a technically complex device that must be installed by a qualified specialist with appropriate experience working with this type of equipment.

Installation and commissioning must be carried out by an authorized and certified company.

Profactor Armaturen GmbH reserves the right to make changes to the product design that do not affect its technical characteristics or functional features.



INTERNATIONAL WARRANTY CARD

NAME OF THE PRODUCT

PRODUCT CODE, SIZE

QUANTITY

SELLER NAME AND ADDRESS

DATE OF PURCHASE

SELLER STAMP

SELLER SIGNATURE

For the warranty term refer to the Warranty obligation clause in the technical manual

FOLD LINE

FOLD LINE

In case of any claims to the product quality the following documents should be submitted:

1. Application with customer and product details:

- Name of the customer, actual address and phone number
- Article of the product
- Reason for the claim and photo
- Plumbing system where installed (name, address, phone number)

2. Invoice copy and receipt

3. Warranty card

RETURN/EXCHANGE COMMENTS

DATE

SIGNATURE



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